

## Section 6. Vectoring

### 5-6-1. APPLICATION

Vector aircraft:

a. In controlled airspace for separation, safety, noise abatement, operational advantage, or when a pilot requests. Allow aircraft operating on an RNAV route to remain on their own navigation to the extent possible.

b. In Class G airspace only upon pilot request and as an additional service.

c. At or above the MVA or the minimum IFR altitude except as authorized for radar approaches, special VFR, VFR operations, or by para 5-6-3, Vectors Below Minimum Altitude.

#### NOTE-

*VFR aircraft not at an altitude assigned by ATC may be vectored at any altitude. It is the responsibility of the pilot to comply with the applicable parts of CFR Title 14.*

#### REFERENCE-

FAAO 7110.65, Minimum En Route Altitudes, Para 4-5-6.

FAAO 7110.65, Priority, Para 7-5-2.

FAAO 7110.65, Altitude Assignment, Para 7-5-4.

FAAO 7110.65, Altitude Assignments, Para 7-7-5.

14 CFR Section 91.119, Minimum Safe Altitudes: General.

d. In airspace for which you have control jurisdiction, unless otherwise coordinated.

e. So as to permit it to resume its own navigation within radar coverage.

f. Operating special VFR only within Class B, Class C, Class D, or Class E surface areas.

g. Operating VFR at those locations where a special program is established, or when a pilot requests, or you suggest and the pilot concurs.

#### REFERENCE-

FAAO 7110.65, Route Use, Para 4-4-1.

FAAO 7110.65, Visual Separation, Para 7-2-1.

FAAO 7110.65, Separation, Para 7-5-3.

FAAO 7110.65, Application, Para 7-6-1.

FAAO 7110.65, Separation Minima, Para 9-5-4.

FAAO 7210.3, Chapter 11, Section 1, Terminal VFR Radar Services.

### 5-6-2. METHODS

a. Vector aircraft by specifying:

1. Direction of turn, if appropriate, and magnetic heading to be flown, or

#### PHRASEOLOGY-

*TURN LEFT/RIGHT HEADING (degrees).*

*FLY HEADING (degrees).*

*FLY PRESENT HEADING.*

*DEPART (fix) HEADING (degrees).*

2. The number of degrees, in group form, to turn and the direction of turn, or

#### PHRASEOLOGY-

*TURN (number of degrees) DEGREES LEFT/RIGHT.*

3. For NO-GYRO procedures, the type of vector, direction of turn, and when to stop turn.

#### PHRASEOLOGY-

*THIS WILL BE A NO-GYRO VECTOR,*

*TURN LEFT/RIGHT.*

*STOP TURN.*

b. When initiating a vector, advise the pilot of the purpose.

#### PHRASEOLOGY-

*VECTOR TO (fix or airway).*

*VECTOR TO INTERCEPT (name of NAVAID) (specified) RADIAL.*

*VECTOR FOR SPACING.*

*VECTOR TO FINAL APPROACH COURSE,*

*or if the pilot does not have knowledge of the type of approach,*

*VECTOR TO (approach name) FINAL APPROACH COURSE.*

#### NOTE-

*Determine optimum routing based on factors such as wind, weather, traffic, pilot requests, noise abatement, adjacent sector requirement, and letters of agreement.*

c. Issue with the vector an altitude to maintain and all appropriate altitude restrictions when:

1. The vector will take the aircraft off an assigned procedure which contains altitude instructions, i.e., instrument approach, nonradar DP, FMSP, etc..

2. The previously issued clearance included crossing restrictions.

**REFERENCE-**FAAO 7110.65, *Route or Altitude Amendments, Para 4-2-5.*

d. If appropriate, advise the pilot what to expect when the vector is completed.

**PHRASEOLOGY-***EXPECT TO RESUME (Route, DP, STAR, FMSP, etc.).***NOTE-**

*You must ensure that the pilot is made aware if he/she is expected to resume a previously issued rout procedure.*

e. Provide radar navigational guidance until the aircraft is:

1. Established within the airspace to be protected for the nonradar route to be flown, or

2. On a heading that will, within a reasonable distance, intercept the nonradar route to be flown, and

3. Informed of its position unless the aircraft is RNAV, FMS, or DME equipped and being vectored toward a VORTAC/TACAN or waypoint and within the service volume of the NAVAID.

**PHRASEOLOGY-**

*(Position with respect to course/fix along route),  
RESUME OWN NAVIGATION,*

*or*

*FLY HEADING (degrees). WHEN ABLE, PROCEED  
DIRECT (name of fix),*

*or*

*RESUME (name/number FMSP/DP/transition/STAR/  
procedure).*

**REFERENCE-**FAAO 7110.65, *Chapter 4, Section 1, NAVAID Use Limitations.*

f. Aircraft instructed to resume a procedure which contains restrictions (DP/STAR/FMSP, etc.) shall be issued/reissued all applicable restrictions or shall be advised to comply with those restrictions.

**PHRASEOLOGY-**

*RESUME (name/number FMSP/DP/transition/STAR),  
COMPLY WITH RESTRICTIONS.*

g. Aircraft vectored off an RNAV route shall be recleared to the next waypoint or as requested by the pilot.

h. During stage A operation, update the route of flight in the computer unless an operational advantage is gained and coordination is accomplished.

i. Inform the pilot when a vector will take the aircraft across a previously assigned nonradar route.

**PHRASEOLOGY-**

*EXPECT VECTOR ACROSS (NAVAID radial)(airway/  
route/course) FOR (purpose).*

**REFERENCE-**FAAO 7110.65, *Application, Para 7-6-1.***5-6-3. VECTORS BELOW MINIMUM ALTITUDE**

Except in en route automated environments in areas where more than 3 miles separation minima is required, you may vector a departing IFR aircraft, or one executing a missed approach, within 40 miles of the antenna and before it reaches the minimum altitude for IFR operations if separation from prominent obstructions shown on the radar scope is applied in accordance with the following:

a. If the flight path is 3 miles or more from the obstruction and the aircraft is climbing to an altitude at least 1,000 feet above the obstruction, vector the aircraft to maintain at least 3 miles separation from the obstruction until the aircraft reports leaving an altitude above the obstruction.

b. If the flight path is less than 3 miles from the obstruction, and the aircraft is climbing to an altitude at least 1,000 feet above the obstruction, vector the aircraft to increase lateral separation from the obstruction until the 3 mile minimum is achieved or until the aircraft reports leaving an altitude above the obstruction.

c. At those locations where diverse vector areas (DVA) have been established, terminal radar facilities may vector aircraft below the MVA/MIA within those areas and along those routes described in facility directives.

**REFERENCE-**FAAO 7210.3, *Establishing Diverse Vector Area/s (DVA), Para 3-9-5.*